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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,171	12/09/2005	Yukio Aoki	09852/0203745-US0	1361
7278	7590	10/16/2007		
DARBY & DARBY P.C. P.O. BOX 770 Church Street Station New York, NY 10008-0770			EXAMINER HEVEY, JOHN A	
			ART UNIT	PAPER NUMBER
			4116	
			MAIL DATE	DELIVERY MODE
			10/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/560,171	Applicant(s) AOKI, YUKIO	
	Examiner John A. Hevey	Art Unit 4116	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/9/05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/05, 9/06, 3/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Application

1. Claims 1-8 are pending and presented for examination.

Claim Objections

2. Claims 1 and 5 are objected to because of the following informalities: the stated 'Nb caronitride' is likely in error, and should be 'Nb carbonitride'. Appropriate correction is required.
3. Applicant is advised that should claims 1-3 be found allowable, claims 5-7 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 1 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The language "a total content of Ta carbonitride and Nb caronitride is in a range of 5 to 8 wt%" in claims 1 and 5 is indefinite. It is unclear whether the combined content

is 5-8 wt.% or if the individual contents are 5-8 wt.% respectively. Therefore, one would not be reasonably apprised of the scope of the claim, and render the claims indefinite.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 1, 3-5, and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakuragi (JP2001-020029).

Claims 1 and 5 are drawn to a WC-beta t-Co based cemented carbide material comprising 12-17 wt.% Co, a beta-t solid solution phase comprising 12-20 wt.% of the material excluding WC content, 5-8 wt.% Ta CN and Nb CN, and the remainder being WC. Sakuragi teaches a WC-beta t-Co cemented carbide material, comprising 8-13 wt.% Co, a beta-t phase comprising 16-28 wt.% of the material excluding WC, and TiC comprises 35-60 wt.% of the material excluding

WC content (see claim 1). The reference further teaches specific examples of combined TaC and NbC content 7-15 wt.% with individual TaC content ranging from 7-14 wt.% and individual NbC content ranging from 0-5 wt.% (see table 1, examples 1-12). The reference differs in that it does not disclose a combined total of 5-8 wt.% including both TaC and NbC. However, it would have been obvious to one of ordinary skill in the art to select from the overlapping portion of the ranges disclosed by Sakuragi.

One would have been motivated to make such modification because it has been held that overlapping ranges establish prima facie obviousness. See MPEP 2144.05. Therefore, claims 1 and 5 are obvious and not patentably distinct over the prior art of the record.

In regards to claims 3 and 7, the fracture toughness of a material is an inherent property. Since the composition of the reference taught here is the same as those claimed, herein it follows that the cemented carbide of Sakuragi would inherently possess the fracture toughness properties recited in claims 3 and 7.

In regards to claims 4 and 8, Sakuragi teaches the use of the cemented carbide (see above) as a surface coating for gear cutting tools (see paragraph 13). Where specifically in regards to claim 8, Sakuragi teaches a hob is the substrate.

9. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakuragi (JP2001-020029) in view of Heinrich et al. (US7163657).

The instant claims are drawn to the content of Ta and Nb in the material, according to the expression $DNb/(DNb+DTa) > 0.7$. Sakuragi teaches the use of Ta and Nb in the carbide material as shown above (see rejection of claims 1 and 5), but differs in that it does not disclose an example which satisfies the expression required by claims 2 and 6. However, it would have been obvious to one of ordinary skill in the art to modify the teachings of Sakuragi with the teachings of Heinrich et al. who teaches a cemented carbide material comprising WC, TiCN, Co, TaC, NbC and ZrC with examples comprising combined 5.4 wt.% and also 7.4 wt.% of TaC and NbC and discloses specific examples where the Ta and Nb content in the expression $DNb/(DNb+DTa) = .84$ and also .88 (see table 19).

One would have been motivated to make such modification because it is well known in the art that TaC and NbC are components of the beta-t solid solution phase and modifying their content can result in an increase of strength (see Heinrich column 1, lines 40-46). The industrial applicability would have been greatly increased by such modification and one would have been expected reasonable success because the modification is considered well within the level (capability) of the ordinary skill in the art. , Therefore, claims 1 and 5 are obvious and not patentably distinct over the prior art of the record.

Conclusion

10. All claims have been rejected.

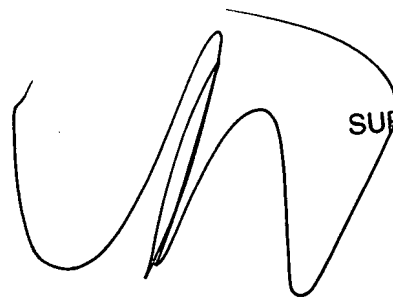
Art Unit: 4116

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John A. Hevey whose telephone number is 571-270-3594. The examiner can normally be reached on Monday - Friday 7:30 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on 571-270-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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A handwritten signature in black ink, appearing to be 'VICKIE Y. KIM', written in a stylized, cursive-like font.

VICKIE Y. KIM
SUPERVISORY PATENT EXAMINER